ACTUARIAL REPORT
on the
INSURANCE FUND
for EMPLOYEES
of
PARTICIPATING MUNICIPALITIES IN MANITOBA
at
JANUARY 1st, 1989

TURNBULL and TURNBULL

91-05554/

Minister of
Rural Development

Legislative Building
Winnipeg, Manitoba, CANADA
R3C 0V8

His Honour George Johnson
Lieutenant Governor of Manitoba
225 Legislative Building
Winnipeg, Manitoba
R3C 0V8

May It Please Your Honour:

As Minister responsible, I have the privilege of presenting for the information of Your Honour the Fourth Triennial Actuarial Report of the Group Insurance Fund for Employees of Participating Municipalities in Manitoba as at January 1, 1989.

Respectfully submitted,

Jack Penner
Minister

Manitoba

Municipal Employees Benefits Board

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Honourable Jack Penner
Minister of Rural Development
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Sir:

I have the honour of presenting to you the Fourth Triennial Actuarial Report on the Group Insurance Fund for Employees of Participating Municipalities in Manitoba. This report was prepared at January 1, 1989 by Turnbull and Turnbull, Consulting Actuaries.

The report indicates that the actuarial deficit of the Insurance Fund has been significantly reduced since January 1, 1986. This reduction has occurred even though the rate of contribution to the Fund for insurance protection was reduced by 9.1%. This deficit is a cautious estimate of the financial position of the Insurance Fund as at that date.

The Actuary states that there should be no cause for concern at this time. The significance of the deficit is decreasing and will hopefully be eliminated in the future.

Respectfully submitted,

G. D. Forrest
Chairman

Chairman and Members of the
Municipal Employees Benefits Board,
Winnipeg, Manitoba.

1. Purpose

The Municipal Act was amended by legislation in 1975. The amendment required each municipality to establish a pension plan for certain of their employees. The amendment also permitted insurance protection to be provided.

In 1976, Regulations were approved which created the Municipal Employee Benefits Program (Program) and gave the Municipal Employees Benefits Board (Board) responsibility for administering the Program. The Regulations also required a periodic actuarial report on the financial position of the Insurance Fund for the Group Insurance Plan for Employees of Participating Municipalities in Manitoba. Reports are required to be prepared at least once every 3 years. The last report was prepared as at January 1st, 1986 (1986 Report).

This Report has been prepared as at January 1st, 1989.

The purpose of this report is to:

(a) determine the financial position of the Insurance Fund for Employees of Participating Municipalities in Manitoba (Fund) as at January 1st, 1989, the valuation date,

(b) evaluate the sufficiency of the contribution rates currently being paid by employees and participating employers to the Fund, and

(c) determine the apparent break-even premium rates for the Group Insurance Plan for Employees of Participating Municipalities in Manitoba (Plan).

The Plan consists of 4 types of group insurance protection:

(a) basic life,

(b) voluntary life,

(c) dependents' life, and

(d) accidental death and dismemberment (A.D.& D.).

In this Report, all references to Plan mean the Group Insurance Plan for Employees of Participating Municipalities in Manitoba. References to the Pension Plan mean the Pension Plan for Employees of Participating Municipalities in Manitoba.

2. Sources of Information

The information on which the valuation is based included:

(a) A magnetic tape which provided information for each employee who was a member of the Plan at any time during the 3-year period ending January 1st, 1989 (valuation period). Details of the information included: social insurance number, section code, name, sex, date of birth, salary received in 1988, proportion of the year that each employee worked in 1988, multiple of salary code and insurance amount.

(b) A list which provided information for each employee at January 1st, 1989 who qualified for a waiver of contribution benefit as a result of total disability. This information included: name, municipality, sex, social insurance number, date of birth, effective date, amount of insurance, status code and date of reduction.

(c) A magnetic tape which provided information for each retired employee who was insured under the Plan. The information provided included: name, social insurance number, municipality code, sex, date of birth, sex and date of birth of beneficiary, beneficiary relationship, type of retirement and insurance amount.

(d) Copies of the Auditor's Reports and Financial Statements on the Insurance Fund Part of the Municipal Employee Benefits Fund for the years ending December 31st, 1986, December 31st, 1987, and December 31st, 1988.

(e) A copy of Group Policy No. ST 59001 issued by the Prudential Assurance Company Limited to the Board (Policy).

(f) A copy of the Municipal Act, as amended to date.

(g) Copies of financial statements prepared for The Prudential Assurance Company Limited (Prudential). These statements provided financial information for the policy years ending December 31st, 1986, December 31st, 1987, and December 31st, 1988.

(h) A copy of the Actuarial Report on the financial position of the Pension Plan for Employees of Participating Municipalities in Manitoba as at January 1st, 1989 (1989 Pension Report).

(i) A copy of the Actuarial Report on the financial position of the Plan for Employees of Participating Municipalities in Manitoba as at January 1st, 1986 (1986 Report).

The data provided as at January 1st, 1989 was reviewed for missing information, illogical information, and was also compared to the data provided as at January 1st, 1986.

The salaries received in 1988 were increased to obtain annual salary rates as at January 1st, 1989. This increase was made by assuming that the increase in salaries during 1988 occurred in accordance with the assumptions made for future increases in salaries.

Some employees were participating in the Plan for only part of 1988. For these employees, the salary received was increased to reflect the salary that would have been received had the employee been a member of the Plan throughout 1988.

3. Membership of the Plan

The information indicated that the membership of the Plan was as follows:

	January 1st, 1989			January 1st, 1986		
Age Group	Males	Females	Total	Males	Females	Total
(a) Employees						
<20	2	1	3	1	1	2
20 - 24	35	38	73	36	30	66
25 - 29	147	64	211	124	56	180
30 - 34	187	66	253	161	43	204
35 - 39	202	60	262	151	44	195
40 - 44	165	62	227	125	40	165
45 - 49	147	49	196	134	39	173
50 - 54	152	32	184	145	28	173
55 - 59	139	18	157	127	16	143
60 - 64	100	12	112	93	12	105
≥65	6	2	8	22	2	24
	1,282	404	1,686	1,119	311	1,430
(b) Retired Employees						
55 - 59	14	2	16	4	2	6
60 - 64	21	7	28	14	8	22
65 - 59	103	19	122	73	7	80
70 - 74	55	4	59	24	1	25
75 - 79	6	0	6	3	0	3
80 - 85	2	0	2	0	0	0
	201	32	233	118	18	136
(c) Disabled Employees						
	37	2	39	34	0	34
Total	1,520	438	1,958	1,271	329	1,600

The following table shows the amounts of group life insurance in force under the Plan:

	January 1st, 1989		
	Males	Females	Total
(a) Employees	$63,209,000	$14,754,000	$77,963,000
(b) Retired Employees	1,961,100	277,000	2,238,100
(c) Disabled Employees	1,793,000	43,000	1,836,000
Total	$66,963,100	$15,074,000	$82,037,100

	January 1st, 1986		
	Males	Females	Total
(a) Employees	$51,545,500	$10,077,000	$61,622,500
(b) Retired Employees	921,358	175,448	1,096,806
(c) Disabled Employees	1,495,364	0	1,495,364
Total	$53,962,222	$10,252,448	$64,214,670

These tables indicate that during the 3-year period:

(a) the number of members of the Plan increased by 22.4%,

(b) the amount of life insurance protection increased by 27.8%,

(c) the average age of employees participating in the Plan decreased to 41.91 years from 42.35 years, and

(d) the average of retired employees participating in the Plan increased to 67.66 years from 67.26 years.

4. Operation of the Plan

In the attached Appendix we provide a description of each type of life insurance protection provided under the Plan.

We also provide information on the operation of the Fund and the financial arrangements with Prudential.

A number of amendments have been made to the Plan during and shortly after the valuation period under review. Details of these changes are provided in the Appendix and later sections of this Report. A list of the significant changes to the Plan follows:

(a) Effective January 1st, 1988 increased contributions and amounts of life insurance to age 85 are permitted. An increase in the minimum amount of insurance from $1,000 to $2,000 was also made.

(b) Effective January 1st, 1990 the rate of contribution to the Plan for basic life and A.D.& D. insurance protection was reduced by 9.1%.

The present rates and the rates previously used are shown in the following table:

		Monthly Contribution Rate per $1,000 of Insurance Protection	
		Present Rate	Previous Rate
(i) Employees		$ .40	$ .44
(ii) Retired Employees	<65	.40	.44
	65 - 69	.80	.88
	70 - 74	1.60	1.76
	75 - 79	3.20	3.52
	80 - 84	6.40	7.04

(c) Effective January 1st, 1990 voluntary life insurance protection was made available to employees who are members of the Plan.

(d) Effective January 1st, 1990 dependents' life insurance protection was also made available to employees who are members of the Plan.

5. Actuarial Assumptions

This valuation is based on a set of assumptions as to those factors which will affect the Plan financially in future years. The factors which are of financial significance to the Plan are:

(a) the rate of return which will be earned on the assets of the Fund,

(b) the rates at which salaries increase, and consequently, the amounts of life insurance protection will increase,

(c) the incidence of death while insured,

(d) the incidence of termination of employment,

(e) the incidence of disability,

(f) the value of benefits expected to be paid to an employee who becomes disabled,

(g) the incidence of retirement prior to age 70,

(h) the proportion of retired members who elect to continue to contribute for group life insurance protection after retirement,

(i) the proportion of terminating members who elect to convert to individual life insurance and the charges for converting to this insurance,

(j) the charge made for administration and professional services,

(k) the charges made by the insurance company for the services it provides,

(l) the incidence of accidental death and dismemberment while insured, and

(m) the proportion of employees electing to insure their dependents, the incidence of death amongst insured spouses, and the relative age of insured spouses.

Assumptions are developed in respect of each of these factors in order to determine:

(i) the amcunts of the contributions expected to be received and the premiums expected to be paid,

(ii) the present value of these expected contributions and premiums for the purposes of establishing the present financial position of the Fund.

A complete study of experience was made for the 1989 Pension Report. Where applicable, the results of the study of the actual experience of the Pension Plan have been used for this Report.

Each other assumption has been developed from the assumptions used in our 1986 Report.

Any differences between the actual experience and expectations based on the existing assumptions have been analyzed. Where appropriate, the assumptions used previously have been modified to reflect the results of this study of the experience.

The assumed rate of return and the expected general increases in salaries are based on experience during the 20-year period prior to the valuation date.

The number of deaths, terminations, disablements, and retirements which actually occurred during these periods were compared to the number expected to occur. The numbers expected to occur were calculated by using the rates of utilization assumed in the 1986 Report.

A description of the studies made and the assumptions adopted follows:

(a) Rate of Return on the Assets of the Fund

At January 1st, 1989, the assets of the Fund consisted of cash, term deposits, funds held by Prudential plus any accounts receivable less any accounts payable.

The term deposits are Treasury Bills issued by the Province of Manitoba.

The rates of return earned on the invested assets of the Fund each year during the last 6 years are shown in the following table:

Year	Rate of Return
1983	11.49%
1984	12.80
1985	9.18
Average	11.16%
1986	8.97%
1987	7.36
1988	8.99
Average	8.44%

These rates of return were calculated using the book value of the invested amounts credited to the Fund and the investment income earned during each year. This income includes the interest credited to funds on deposit at Prudential.

There was a significant decrease in the rates of return earned during the period under review. This was, in part, due a decrease in rates of interest.

These rates of return were also adversely affected by the relatively small amounts able to be invested in Treasury Bills during the 3-year period. The growth of the Fund will make possible more investment opportunites in the future.

The Fund may invest in any security that is an eligible investment for the Pension Plan. It is to be expected that a large portion of the Fund will, in future, be invested in bonds with a variety of terms to maturity. The balance of the Fund will likely continue to be invested in short-term notes and equivalent types of investments.

An actuarial valuation relates to events which are expected to happen in the future. As a result, the rates of return obtained in past years are important only to the extent that they constitute an indication of the rates of return which can be expected to be earned in the future. The rate of return assumed in an actuarial valuation should represent a reasonable balance between current rates of return and the level of investment earnings expected to be realized in the future.

An indication of the rates of return likely to be available in future years can be obtained from a study of the rates which have been available over a period in the past. It is important that the period studied be long enough to include a variety of economic conditions. This is achieved by using a 20-year period. In this Report, we have used the 20-year period ending January 1st, 1989.

A period as long as 20 years allows the effect of a variety of economic conditions to be reflected in the result obtained. It reduces the fluctuations and distortions which can occur, over shorter periods of time, due to business conditions and government controls.

If equal amounts had been invested each month in federal bonds, the average rate of return would have been 10.06% per year. This calculation was made by using yields obtained from the ScotiaMcleod Long-Term Canada Index.

It is desirable to make allowance for the possibility that the rates of return which are available in the future may be less than the rates of return which were available during the latest 20-year period.

This allowance could be made by excluding from the calculation the very high rates of return that were available during 1981 and the first 6 months of 1982. If this is done, the 20-year average rate of return becomes 9.64% per year.

An allowance should be made for the need to have the Fund in temporary investments, such as cash and term deposits. The rate of return on these investments is usually lower than the rate of return available on bonds and mortgages. This allowance would justify a reduction of .50 of 1% in the rate of return produced over the 20-year period.

The rate assumed is also affected by the following consideration. The assumed rate should take into account the effect which a decrease in the rate of inflation will have on the rates of return obtained in future. Due to the important financial consequences of any need to decrease the assumed rate, the rate chosen should continue to be satisfactory in periods when lower rates of inflation are being experienced.

The following table summarizes the adjustments made in determining the assumed rate of return:

Calculation based on 20-year average for federal bonds	10.06%
Effect of removing 1981 and first 6 months of 1982 from 20-year average	(.42)
Allowance made for need to have the Fund in cash and term deposits	(.50)
Allowance for lower rates of inflation	(.64)
Assumed rate of return - per year	8.50%

In the 1986 Report the assumed rate was also made equal to 8.50% per year.

A proportion of the assumed rate of return is attributable to the expectation that inflation will exist in the future. Inflation causes a decrease in purchasing power. Knowledgeable investors have sought to offset this decrease by charging rates of interest which, on average, make allowance for the expected rate of inflation during the term of the investment. This allowance is added to the real rate of return desired by the investor to produce the rate of interest charged on that investment.

This decrease in purchasing power can be measured by determining the average annual rate of increase in the Consumer Price Index. During the 20 years ending December 31st, 1988, the Consumer Price Index increased by an average of 6.87% per year.

This increase is also affected by the elimination of the increases in the Consumer Price Index during 1981 and the first 6 months of 1982 from the period covered by the average. If that is done, the increase in the Consumer Price Index over the period is 6.44% per year.

The anticipated rate of return makes allowance for the possibility that the rate of inflation will be lower in the future than it has been in the past. Some allowance has been made for this lower rate by using a rate of inflation which is lower than the rate that would be justified by using the relevant part of the 20-year period. The allowance for inflation was reduced in proportion to the reduction made to the assumed rate of return. This caused a reduction of .19 of 1% in the assumed rate of inflation. As a result, the assumed rate of inflation is 6.25% per year.

If the inflationary component in the assumed rate of return of 8.50% is 6.25% the real rate of return is expected to be 2.25% per year.

There are 2 reasons for identifying the 2 parts of the assumed rate of return. These are:

(i) The assumed rate of return is based on an assumption as to future economic conditions. So also is the assumption made as to the rate at which general increases in salary will occur in future. In order to ensure consistency, the same allowance for inflation, i.e. 6.25% per year, is used in developing both actuarial assumptions.

(ii) By identifying the real rate of return, a good indication can be obtained of the significance of the rate assumed in other than average economic conditions. The assumptions of a real rate of return of 2.25% per year implies that new investments obtained for the Fund are anticipated to yield a rate of return of 2.25% per year in excess of the average rate of inflation during the period these investments are held.

(b) Rates of Salary Increase

Salary increases occur as a result of:

(i) general increases. These increases in salary are granted to all employees and reflect changes in economic conditions, and

(ii) service, merit and promotional increases. These increases in salary are granted on an individual basis to recognize an employee's service and increased value to the municipality.

Each class of increase in considered separately in developing the rates at which salaries can be expected to increase in the future:

(i) General increases in Salary Levels

The 2 components of general increases in salaries are:

(A) the inflationary component. Employees seek increases in salary in order to offset any decreases in the purchasing power which is caused by inflation, and

(B) the productivity component or increase in the standard of living component. The productivity component consists of that portion of general increases in salaries which are not offset by inflation. These increases are due to factors such as increases in the real value of goods and services produced per employed person. An increase in productivity is made possible by the greater use of automated or other equipment. Other increases can occur as a result of increases in qualifications needed to fulfill a position.

The inflationary component of future increases in salaries should be the same as the inflationary component included in the rate of return assumed to be earned on the assets of the Fund in future years. As explained in the previous subsection of this Report, the period used requires the allowance made for inflation in the future to be at the rate of 6.25% per year.

The productivity component is based on a study of increases in the average earnings of employed persons in Canada during the 20-year period prior to the valuation date. The productivity component is obtained by deducting the inflationary component from these increases in earnings. During this period, the productivity component was equal to 1.06% per year.

On this basis of these considerations, an allowance of 1.00% per year was made for the productivity component of general salary increases. This is the allowance which was made in our 1986 Report.

The expected general increase in salary is obtained by adding together the increases expected to occur in each component. On that basis, general increases in salary are expected to occur at a rate equal to 7.25% per year in future. This rate consists of an average anticipated productivity increase of 1.00% per year plus an allowance for future inflation at a rate of 7.25% per year.

(ii) Service, Merit and Promotional Increases

A study was made of increases in basic salary due to service, merit and promotion for the purposes of the 1989 Pension Report.

The rates of increase in basic salary due to service, merit or promotion adopted for this Report are the same as those adopted for the 1989 Pension Report.

(c) Incidence of Death While Insured

(i) Death in Service

A study was made of death claims amongst covered employees. The results of this study are shown in the following table:

	1986 - 1988			1980 - 1988		
	Actual	Expected	Ratio	Actual	Expected	Ratio
Males	8	12	67%	29	42	69%
Females	0	1	0	2	4	50
Total	8	13	62%	31	46	67%

The actual number of deaths was less than the number expected during both the 3-year period and 9-year period prior to the valuation date.

In the 1986 Report, the rates of mortality for males and females were reduced.

For this Report, a further reduction in the rates of mortality was made. This reduction reduced by 50% the difference between the actual number of deaths and the number expected to occur during the 9-year period prior to the valuation date.

On the basis of these new rates of mortality, 35 deaths amongst males and 3 deaths amongst females would have been expected to occur during the 9-year period prior to the valuation date.

(ii) Death After Retirement

A distinction is made between:

(A) employees who retired in at least average health, and

(B) employees who retired due to total disability.

This separation is necessary as there is a significant difference in the mortality rates of these 2 groups of former employees.

The experience of these 2 groups is described below:

(A) Employees who retired in at least average health.

A study was made of this part of the experience for the 1989 Pension Report. The results of this study were considered to be suitable for this Report. As a result, the rates of mortality adopted for this Report are the same as the rates used for the 1989 Pension Report.

(B) Employees who were disabled at the date of retirement.

There is little accumulated experience amongst disabled retired employees.

For this group of pensioners, the starting point in choosing the rates of mortality in the 1986 Report was actual experience obtained from 12 major life insurance companies. This experience was compiled in a study of mortality rates amongst employees who qualified for waiver of premiums benefits under group life insurance. This study was compiled over the period 1960 to 1969 and the results of the study are contained in the 1970 Group Life Premium Waiver Valuation Table (1970 Group Life Study).

The rates of mortality are affected by the definition of disability used to determine if an employee is disabled. The standard definition of disability is more onerous than the definition used in the Plan. A more onerous definition causes the rates of mortality to be higher amongst employees who qualify for waiver of contributions under the typical group life insurance plan than they will be amongst employees who qualify for waiver of contributions under the Plan.

The rates of mortality adopted for employees who are disabled at the date the pension commences were set at 2/3 of the rates of mortality produced by the 1970 Study for the 1986 Report. This is also the assumption made for the latest Actuarial Report on the Group Insurance Fund established for civil servants in Manitoba.

The following additional information was considered:

(1) the rate of disablement is several times the rate applicable in other plans. This has caused an increase in the rates of disablement used in this Report,

(2) the definition of disablement is less onerous than the definition used in the Civil Service Group Insurance Plan,

(3) there has been significant reductions in the rates of mortality since 1970.

As a result, the rates of mortality were reduced from 2/3 to 1/2 of the rates of mortality produced by the 1970 study.

(d) Incidence of Termination of Employment

A study was made of the rates of termination of employment for the purposes of the 1989 Pension Report. These rates of termination were based on terminations leading to a cash settlement, retention of a deferred pension or some combination of both.

The ultimate rates of termination of employment adopted for this Report are the same as those adopted for the 1989 Pension Report.

For the 1986 Report, a scale of select factors was developed which, when applied to the ultimate rates of termination, produced the rates of termination at durations of service of 4 years or less. These select factors were as follows:

Service	Factor Applied to Ultimate Termination Rates
<1	2.00
1	1.60
2	1.40
3	1.25
4	1.10
≥5	1.00

For this Report, these factors were reviewed. As a result of this review, it was decided to continue in use these factors for this Report.

(e) Incidence of Disability

A study was made of those disablements which caused contributions to be waived. The results of this study are shown in the following table:

	1986 - 1988			1980 - 1988		
	Actual	Expected	Ratio	Actual	Expected	Ratio
Males	25	11	227%	66	37	178%
Females	2	3	67	2	13	15
Total	27	14	193%	68	50	136%

The actual number of disablements amongst male employees was much greater than the number expected during both the 3-year period and 9-year period prior to the valuation date. For female employees the actual number of disablements was equal to the number expected during the 3-year period and less than the number expected during the 9-year period prior to the valuation date.

The rate of disablement amongst males increased significantly during the 6-year period prior to the valuation date. This was anticipated as a result of the establishment of the Disability Part of the Pension Plan.

As a result, the rates of disablement were increased. The increase was made to reduce, by about 50%, the difference between the actual number of disablements and the number expected to occur during the 9-year period prior to the valuation date.

On the basis of these new rates of disability, 52 disablements amongst males and 6 disablements amongst females would have been expected to occur during the 9-year period prior to the valuation date.

(f) Value of Disability Benefits

If an employee becomes disabled, he is eligible for a waiver of contributions.

This benefit permits the continuation of an employee's insurance without the payment of contributions. The contributions which the employee would otherwise have made are waived up to age 65 or earlier recovery. After age 65, contributions resume. The amount contributed is the same as the amount contributed by other retired employees.

For the 1986 Report the value at the date of disability of the waiver of contribution benefits was based upon 2/3 of the mortality rates contained in the 1970 Group Life Premium Waiver Valuation Table. We noted earlier that these rates are based upon the combined experience of 12 major life insurance companies. These rates were used to estimate the likelihood at each duration of disablement, that a disabled person will recover or die while his insurance is in force.

As indicated previously the rates of mortality for disabled employees has been reduced. Consistent with this reduction the value of the waiver of contribution benefits is based upon 1/2 of the mortality rates contained in the 1970 Group Life Premium Waiver Valuation Table for this Report.

(g) Incidence of Retirement

The rates of retirement adopted for this Report are the same as the rates adopted for the 1989 Pension Report. These rates reflect only retirements for reasons other than disability.

(h) Proportion of Members Continuing Insurance Protection After Retirement

On retirement, a participant may elect to:

(i) continue to contribute to the Plan, or

(ii) cease making contributions.

A large percentage of participants continue to make contributions. Over the 3-year period prior to the valuation date, 76 of 90 or 84% of the insured employees who retired, and were still alive on the valuation date, elected to continue making contributions.

Those who ceased making contributions are insured for $2,000.

For the 1986 Report it was assumed that all retiring participants would continue to make contributions to the Plan. This assumption has been continued in use for this Report.

This assumption makes an allowance for the possibility that, in future, a larger proportion of employees will elect to contribute for group life insurance after retirement.

(i) Conversion Charges

The following procedure was used to evaluate the likelihood that an employee will convert his group life insurance to individual life insurance if his insurance is terminating or being reduced.

Over the 3-year period prior to the valuation date, there were no conversions to individual policies amongst employees under the Plan whose insurance decreased or terminated.

It has been assumed that the conversion privilege will be chosen by one employee out of every 1,000 employees who have an opportunity to convert their life insurance.

It was anticipated that a special charge would be made for each $1,000 of life insurance converted. The amount of the conversion charge is made in accordance with the schedule actually used by Prudential.

(j) Administrative and Other Charges

The Board entered into an agreement with the Civil Service Superannuation Board (Superannuation Board) to provide administrative services to the Board with regard to its Pension Plan and Insurance Plan operations. In accordance with the terms of the agreement, the Board reimburses the Superannuation Board for the cost of these services. The amount of this cost is shown in total for the Insurance Fund Part and the Pension Fund Part of the Manitoba Municipal Employee Benefits Fund.

To date, none of these costs have been paid out of the Insurance Fund. This was a logical approach since a very large part of the costs incurred were not affected by the existence of the Insurance Plan. We expect that this practice will change as recognition is given to the ongoing work created by the Insurance Plan.

We have assumed that, in future, 5% of the amounts charged by the Superannuation Board will be paid out of the Insurance Fund.

In addition, the Fund is expected to pay all actuarial fees which are attributable to the Plan. In the past, these fees have been charged to the Fund. A portion of the actuarial fees charged during the valuation period is related to the work done to establish the voluntary life and dependents' insurance protection. Much of this work is not expected to be reoccurring. As a result only 2/3 of the actual average actuarial fees charged during the valuation period is expected to be of reoccurring nature.

It has been anticipated that the share of expenses charged to the Insurance Fund will be equal to $20,700 per year in each of the next 3 years. This is equivalent to 5% of contributions.

(k) Charges Made by Insurance Company

The charges assessed by Prudential for the services it provides are the sum of the following amounts effective April, 1989:

(i) Provincial premium taxes of 2% of the excess of premiums over experience refunds.

(ii) A policy fee of $1,456 per year.

(iii) A charge of $130 per claim.

(iv) Underwriting Charges:

- per non-medical claim	$ 18
- per medical claim	$140

(v) A charge for general administration and profit in accordance with the following scale:

Annual Premium	Percentage
First $250,000	3.25%
Next 250,000	1.50
Next 250,000	1.25
Next 250,000	1.00

(vi) Risk and stop-loss charges in accordance with the following scale:

Annual Premium	Percentage
First $250,000	.75%
Next 250,000	.50
Next 250,000 and thereafter	.25

It has been anticipated that these charges will continue to be in effect in future policy years.

(l) Incidence of Accidental Death and Dismemberment While Insured

Over the 9-year period prior to the valuation date, there was only one accidental death and dismemberment claim under the Plan.

A recent study was made of A.D.& D. experience for the larger related Public Service Group Insurance Fund. That study resulted in the reduction of the A.D.& D. rates used there.

The rates produced by that study have been adopted for this Report.

(m) Dependents

(i) Proportion of employees electing to insure dependents

Dependents' life insurance protection was established on January 1st, 1990. As a result, no information is available concerning the proportion of the employees who elected to insure their dependents.

Experience on the proportion of employees with dependents' insurance protection is available from studies of similar groups of employees. After consideration of these studies a decision was made.

We assumed that a proportion of male employees and a proportion of female employees will elect to insure their dependents in future.

These proportions are higher at ages 30 to 55 inclusive. The following proportions were used:

Age	Males	Females
Up to 29	.400	.300
30 - 55	.800	.600
56 and older	.750 reducing to .550	.563 reducing .413

It has also been assumed that the cost of the protection provided to dependents in a family unit is equivalent to the cost of providing $15,000 of life insurance protection to the spouse of each employee who elects to ensure his/her dependents.

This assumption is consistent with actual experience amongst similar groups of employees.

(ii) Annual rates of death amongst insured spouses

The rates of death among insured spouses have been made equal to the rates of death of employees of the same sex and age.

(iii) Relative age of insured spouses

The relative ages of insured spouses have been made the same as the relative ages of spouses adopted for the 1989 Pension Report.

6. Summary of Actuarial Assumptions Used in this Report

(a) Annual Rate of Return on the Assets of the Fund - 8.50% per year.

Annual Rate of Inflation - 6.25% per year.

(b) Annual Rates of Increase in Salaries (including an allowance of 7.25% per year for future general increases in salary levels).

Average Annual Increases in Salaries

Age Group	Males	Females
20 - 24	12.3%	10.7%
25 - 29	10.8	10.2
30 - 34	9.9	10.1
35 - 39	9.6	9.1
40 - 44	8.9	9.0
45 - 49	9.0	8.7
50 - 54	8.9	8.7
55 - 59	7.7	8.3
60 - 64	7.7	8.0
65 - 69	7.5	7.7

(c) Incidence of Death While Insured

(i) Annual rates of death in service (for selected ages):

Attained Age	Males	Females
20	.0009	.0004
25	.0006	.0003
30	.0005	.0002
35	.0007	.0003
40	.0013	.0005
45	.0022	.0009
50	.0036	.0014
55	.0058	.0023
60	.0100	.0038
65	.0164	.0057
69	.0199	.0075

(ii) Annual Rates of Death After Retirement (for selected ages):

Attained Age	Non-Disabled		Disabled (ultimate rates)	
	Males	Females	Males	Females
40	N/A	N/A	.0115	.0115
45	N/A	N/A	.0155	.0155
50	N/A	N/A	.0185	.0185
55	N/A	N/A	.0215	.0215
60	.0092	.0042	.0260	.0260
65	.0156	.0071	.0350	.0350
70	.0275	.0124	.0455	.0455
75	.0446	.0240	.0575	.0575
80	.0741	.0429	.0760	.0760
85	.1148	.0699	.1015	.1015
90	.1663	.1118	.1350	.1350
95	.2341	.1824	.1965	.1965
100	.3192	.2952	1.0000	1.0000

(d) Termination of Employment

(i) Annual rates of termination applicable to members with 5 or more years of service (for selected ages):

Attained Age	Males	Females
20	.109	.226
25	.081	.203
30	.057	.143
35	.042	.083
40	.028	.047
45	.020	.036
50	.011	.024
54	.007	.014

(ii) The rates of termination applicable to members with less than 5 years of service were obtained by multiplying the above rates by the appropriate factor from the following table:

Service	Factor Applied to Ultimate Termination Rates
<1	2.00
1	1.60
2	1.40
3	1.25
4	1.10
≥5	1.00

(e) Annual Rates of Disability (for selected ages):

Attained Age	Males	Females
22	.0001	.0001
27	.0002	.0001
32	.0007	.0002
37	.0010	.0002
42	.0020	.0005
47	.0030	.0007
52	.0050	.0036
57	.0140	.0080
62	.0270	.0177

(f) Value of Waiver of Contribution Benefit:

Attained Age	Value of waiver of contribution benefit at approval of disability (per $1,000 of insurance)
22	$ 63
27	97
32	131
37	160
42	191
47	217
52	228
57	208
62	105

(g) Annual Rates of Retirement (for selected ages):

Attained Age	Males	Females
55	.046	.005
56	.022	.092
57	.013	.006
58	.019	.018
59	.027	.049
60	.041	.074
61	.050	.092
62	.067	.124
63	.094	.143
64	.119	.161
65	.632	.584
66	.370	.233
67	.376	.600
68	.175	.500
69	.300	1.000
70	1.000	1.000

(h) Proportion of Retirements where Post-retirement Insurance Protection is expected to be elected.

All retiring employees are assumed to elect the full amount of life insurance protection available.

(i) Proportion of Terminating Members Converting to Individual Insurance and the Conversion Charges.

It has been assumed that out of each 1,000 terminations, one person will elect to convert his/her group life insurance to individual life insurance and that Prudential will levy a conversion charge in accordance with the following schedule:

Attained Age	Conversion Charge per $1,000 of Life Insurance
<25	$ 25
25 - 29	30
30 - 34	40
35 - 39	55
40 - 44	70
45 - 49	100
50 - 54	135
55 - 59	155
60	170
61	180
62	185
63	190
64	200
65	205
66	215
67	220
68	230
69	235
70	245

(j) Administrative and Other Charges.

Charges equal to $20,700 per year for each of the next 3 years.

(k) Charges made by Insurance Company.

Charges equal to the sum of:

(i) 2% of premium less refund for premium taxes,

(ii) $1,456 policy fee,

(iii) $130 per death claim,

(iv) underwriting charges:

- per non-medical claim	$ 18
- per medical claim	$140

(v) charges for general administration and profit in accordance with the following scale:

Annual Premium	Percentage
First $250,000	3.25%
Next 250,000	1.50
Next 250,000	1.25
Next 250,000	1.00

(vi) charges for risk and stop loss in accordance with the following scale:

Annual Premium	Percentage
First $250,000	.75%
Next 250,000	.50
Next 250,000	.25

(1) Annual Rates of Accidental Death and Dismemberment (for selected ages):

Attained Age	Rates
20	.000546
30	.000279
40	.000279
50	.000338
60	.000450
65	.000583
69	.000723

(m) Dependents

(i) Proportion of employees electing to insure dependents:

Attained Age	Male Employee	Female Employee
<30	.400	.300
30 - 55	.800	.600
56	.750	.563
57	.750	.563
58	.750	.563
59	.700	.525
60	.700	.525
61	.650	.488
62	.650	.488
63	.600	.450
64	.600	.450
≥65	.550	.413

It was assumed that, on average, each employee with dependents' life insurance protection would have the equivalent of $15,000 life insurance on the spouse alone.

(ii) Annual rates of death amongst insured spouses:

Attained Age	Male Spouse	Female Spouse
20	.0009	.0004
25	.0006	.0003
30	.0005	.0002
35	.0007	.0003
40	.0013	.0005
45	.0022	.0009
50	.0036	.0014
55	.0058	.0023
60	.0100	.0038
65	.0164	.0057
69	.0199	.0075

(iii) Relative age of insured spouses:

Age of Employee	Age of Male Spouse	Age of Female Spouse
20	22	19
30	32	28
40	43	37
50	53	46
60	64	55
69	74	64

7. Valuation Results - Present Members of the Plan

The Fund receives contributions from and on behalf of participating members and in turn remits premiums to Prudential for insurance protection. The rates of contribution currently being paid to the Fund for the Plan are different from the premium rates paid to Prudential in respect of basic life and A.D.& D. insurance protection.

The following steps are used to determine the financial position of the Fund at the valuation date.

Each year there is agreement as to premiums to be paid to Prudential. These premiums are used to provide:

(a) basic life insurance protection for employees and retired employees including the $2,000 paid-up life insurance available,

(b) accidental death and dismemberment protection for employees, and

(c) dependents' life insurance and voluntary life insurance.

The Fund is required to pay:

(a) the agreed upon premiums, and

(b) a share of the expenses incurred by the Board in the operation of the Fund.

A Valuation Balance Sheet has been prepared for the Fund as at January 1st, 1989. This Balance Sheet shows the assets and liabilities which are attributable to the decision to offer life insurance and accidental death and dismemberment insurance protection.

This insurance protection was in effect on January 1st, 1989, the valuation date.

The financial position of the Fund is indicated by the relationship between:

(i) the present value of the premiums expected to be paid to Prudential for such benefits promised and the expenses expected to be incurred, and

(ii) the present value of the funds available to finance these premiums as they become due.

The actuarial valuation is the process whereby this relationship is quantified.

The present value of the premiums in respect of a benefit is determined separately. For each employee, and each future year of service in the Plan, we determine:

(i) the probability of that benefit becoming payable at each future age based on the actuarial assumptions outlined in the previous section of this Report,

(ii) a discount factor which makes allowance for the portion of the benefit which is expected to be financed by future investment earnings, and

(iii) the amount of the expected benefit. The expected benefit is calculated using the salary expected to be received prior to the occurrence of this event.

The present value of the premiums for a benefit is the sum of the product of these 3 components over all possible future years of service for that employee. The present value of the premiums for that benefit is the sum of the present values obtained for all employees.

The present value of the premiums in respect of pensioners and former employees on waiver of contributions is determined by a similar process.

The principal sources of funds available to finance the premiums are:

(i) the present assets of the Fund, and

(ii) the contributions expected to be made to the Fund by the employees and the participating municipalities.

The present value of the contributions which are expected to be received in the future for employees already participating in the Fund are valued in a similar way. For each employee the expected contributions for each year in the future are multiplied by the probability, based on the actuarial assumptions, that the employee will still be participating in the Plan at that age in the future and by a discount factor. The present value of future contributions for each employee is the sum of the present values obtained over all possible future years of service for that employee. The present value of future contributions is the sum of the present values obtained for all employees.

The Valuation Balance Sheet reflects the financial position of the Fund with respect to the present participants. While new contributors will affect the financial position, their number and distribution by age, sex and amount of insurance is much less easy to predict than the other factors taken into account in the Valuation.

The following Balance Sheet anticipates that the relationship between the contributions paid by employees or other persons participating in the Fund and on their behalf by participating municipalities and the premiums paid to Prudential will remain the same as it existed at the time this Report was prepared.

The present value of future contributions and the present value of future premiums are shown separately only if the value of future premiums exceeds the value of future contributions. Otherwise only the excess of the present value of future contributions over the present value of future premiums is shown.

A Valuation Balance Sheet has not been prepared for other insurance protection.

The contributions paid by members for voluntary life insurance and dependents' life insurance protection are expected to be self-supporting.

Any gains realized by this part of the Program are expected to be used to finance increases in insurance protection or to permit decreases in premium rates.

As a result, there is no net obligation or advantage created by the decision to offer this insurance protection. Consequently, a Valuation Balance Sheet is not required.

Insurance Fund for the Group Insurance Plan for Employees of Participating Municipalities in Manitoba
Valuation Balance Sheet
at January 1st, 1989

ASSETS	
Cash in Bank	$ 39,641
Term Deposits	600,000
Accrued Interest	11,891
Contributions Receivable	33,031
Funds on deposit with Prudential (Note 1)	195,952
Value of future contributions	
- in excess of the contributins required to provide life insurance (Note 2)	1,435,900
Value of future contributions after retirement	
- present retirees (healthy)	97,000
- present retirees (disabled)	6,100
- future retirees (healthy)	947,500
- future retirees (disabled)	111,000
TOTAL ASSETS	$3,478,015
LIABILITIES	
Accounts Payable	$ 38,016
Value of future insurance benefits provided after retirement	
- present retirees (healthy)	279,700
- present retirees (disabled)	48,000
- future retirees (healthy)	1,220,300
- future retirees (disabled)	431,400
Value of waiver of future contributions	
- present disabled employees	235,100
- future disabled employees	1,503,100
Value of administration expenses during next 3 years	55,100
TOTAL LIABILITIES	$3,810,716
DEFICIT (Note 3)	$ 332,701

Notes:

1. The funds on deposit with Prudential consist of:

Claims Fluctuation Reserve at January 1st, 1989	$152,989
1988 Experience Refund	42,963
Total	$195,952

2. The value of future contributions in excess of the contributions required shown is in respect of both the basic life and A.D.& D. insurance protection.

3. It is of interest to note that, if the Plan had been wound up on the valuation date, there would be a surplus of $327,699 as at January 1st, 1989.

   This wind-up of surplus is based on:

   (a) the assumptions quoted in this Report,

   (b) the premise that all present healthy and disabled retirees and present disabled employees' liabilities would be fully funded by the Plan, and

   (c) the Fund would incur and fund expenses to the extent of $55,100.

8. Analysis of Valuation Results

The Valuation Balance Sheet discloses that the Plan has a deficit of $332,701 as at January 1st, 1989. In our 1986 Report, a deficit of $1,086,951 as at January 1st, 1986 was disclosed.

The financial position of the Plan as at January 1st, 1989 can be reproduced if the deficit as at January 1st, 1986 is adjusted to recognize the various changes in the financial position which occurred during the period under review. This procedure is demonstrated in the following schedule:

Deficit as at January 1st, 1986	$1,086,951
Interest on deficit at 8.50%	301,400
Expected deficit as at January 1st, 1989 before effect of changes to Plan, actual experience and changes in expected future experience	$1,388,351
Favourable effect of amending the Plan to provide increased contributions and amounts of insurance to age 85 and an increase in the minimum level from $1,000 to $2,000	(101,600)
Favourable effect of the increase in the value of the excess of contributions over break-even premiums expected (prior to 9.1% reduction in contribution rate from 44¢ to 40¢)	(417,700)
Adverse effect of reducing the contribution rate by 9.1% from 44¢ to 40¢	662,300
Favourable effect of actual experience	(280,950)
Deficit as at January 1st, 1989 before effect of changes in expected future experience	$1,250,401
Effect of changes in expected future experience	(917,700)
Deficit as at January 1st, 1989	$ 332,701

The most significant factors which influenced the actual experience during the period under review and improved the financial results were:

(a) The actual increases in salary and hence life insurance protection were smaller than expected. The improvement in the financial position due to this source was equal to $251,600.

(b) The mortality experience and expenses charged by Prudential were more favourable than expected. As a result, the following experience refunds (deficits) were determined:

Policy Year	Experience Refund
1986	$42,229
1987	0
1988	42,963
	$85,192

The claims fluctuation reserve held by Prudential increased by $21,510 to $152,989.

The improvement in the financial position due to these sources was equal to $106,702.

(c) The decrease in the average age of employees participating in the Plan.

(d) The decision not to deduct administrative charges for the Insurance Fund.

The most significant factors which influenced the actual experience during the period under review and had an adverse effect on the financial results were:

(a) The actual number of disablements was greater than the number expected to occur.

(b) The actual number of retirements was greater than the number expected to occur.

The following changes made to the actuarial assumptions had a favourable effect on the financial results:

(a) The decrease in the rates of salary increases due to service, merit or promotion.

(b) The decrease in the rates of mortality prior to the date of retirement.

(c) The decrease in the rates of mortality amongst disabled retirements and the decrease in the rates of mortality of disabled employees on waiver.

The following changes made to the actuarial assumptions had an adverse effect on the financial results:

(a) The increase in the rate of inflation, and hence general salary increases and insurance protection assumed to be earned on the Fund in the future.

(b) The increase in the rates of disability.

(c) The increase in the rates of retirement.

The net favourable effect on the financial position due to the changes made to the actuarial assumptions is equal to $917,700.

The principal reason for the deficit is the initial unfunded liability created when the Plan commenced.

For employees who became participants of the Plan at the date the Plan commenced, an initial unfunded liability was created since contributions will be made for these participants only for a portion of their working lifetime. As the Insurance Fund grows, the importance of this initial unfunded liability is decreasing. The deficit as a percentage of total liabilities has declined in each of the valuations performed since January 1st, 1980 as indicated in the following table:

Valuation Date January 1st	Deficit as a Percentage of Total Liabilities	Insured Employees
1980	58%	804
1983	42	1,337
1986	40	1,430
1989	9	1,686

This decline in the relative importance of the initial unfunded liability occurred even though:

(a) The rate of contribution to the Plan for employees (and corresponding amounts for retired employees) has been reduced as indicated in the following table:

Effective Date	Monthly Contribution Rate per $1,000 of Insurance
January 1st, 1977	48¢
January 1st, 1979	44
January 1st, 1990	40

(b) The amounts of optional basic life insurance protection available to retired employees has been increased (to age 85 from age 70) and the minimum level of paid-up insurance has been increased from $1,000 to $2,000.

9. Premium Rates

The break-even premium rates which are needed in order to provide the insurance protection promised under the Plan and the agreed upon charges for services and other costs have been determined on the basis of the assumptions described in Section 6 of this Report and the distribution of insurance by age and sex as at January 1st, 1989.

The contribution rates paid to the Fund, the break-even premium rates, and the premium rates paid to Prudential are shown in the following table for each category of insurance protection:

	Basis for Contribution	Attained Age	Monthly Contribution Rate Paid to Fund	Monthly Premium Rate Paid to Prudential	Monthly Break-Even Premium Rate
(a) Basic Life	per $1,000 of insurance				
- Employees		n/a	$ .35	$ .28	$ .27
- Retired employees		<65	.40	1.61	1.80
		65 - 69	.80	1.61	1.80
		70 - 74	1.60	1.61	1.80
		75 - 79	3.20	1.61	1.80
		80 - 84	6.40	1.61	1.80
(b) Voluntary Life	per $1,000 of insurance (smoker/non-smoker rates shown)	<35	.12/ .07	.12/ .07	.07/ .05
		35 - 39	.15/ .09	.15/ .09	.10/ .06
		40 - 44	.24/ .12	.24/ .12	.19/ .09
		45 - 49	.42/ .18	.42/ .18	.32/ .13
		50 - 54	.77/ .35	.77/ .35	.55/ .25
		55 - 59	1.14/ .54	1.14/ .54	.87/ .41
		60 - 64	1.58/ .82	1.58/ .82	1.50/ .78
		65 - 69	2.22/1.28	2.22/1.28	1.97/1.13
(c) Dependents' Life	per insured employee	n/a	2.20	2.20	1.65
(d) A.D.& D.	per $1,000 of insurance	n/a	.05	.035	.03

Notes:

1. Retired employees are not eligible for voluntary life, dependents' life, or A.D.& D. insurance protection.

2. For voluntary life insurance protection the monthly rates paid to the Fund and to Prudential are shown above, reflecting the smoker and non-smoker scales separately.

The premium rates currently being charged for employees basic life insurance and accidental death and dismemberment insurance protection are slightly higher than the break-even premium rates that have been calculated on the basis of the assumptions used in this Report.

The break-even premium rates calculated for this Report are lower for employees basic coverage and higher for retired employees basic coverage compared to the corresponding break-even premiums calculated for the 1986 Report.

The premium rate currently being charged for retired employees life insurance protection is based on Prudential's standard mortality rates. The experience expected using these rates of mortality is more favourable than the experience expected using the rates of mortality assumed in this Report.

10. Recommendations

The existence of a deficit in the Fund should not be a cause for concern at this time. The significance of the deficit is decreasing. The deficit has reduced to 9% of the liabilities at January 1st, 1989.

This reduction has occurred even though the rate of contribution to the Fund for insurance protection was reduced by a further 9.1%.

There has been an improvement in the experience rating results during the valuation period. Experience refunds have been paid by Prudential. This improvement was expected. There is a continuing increase in the proportion of eligible employees who are participating in the Plan. This increase is the result of the automatic participation of all new employees who fulfill the eligibility requirements. There is also much less opportunity to select against the Plan now than there was at the time the Plan was established.

Fluctuations in the amount of claims paid from year to year can cause the experience to be unfavourable in one period and favourable in the next. The existence of a deficit increases the importance of favourable claims experience in the future to keep the contribution rates at their current level.

Rates of investment income since January 1st, 1989 have been higher than the rate assumed in this Report. If this trend continues, the financial position of the Insurance Fund will show a further improvement in the next valuation.

We recommend that no further changes be made to the rates of contribution at this time. We further recommend that any improvements made be financed out of an increase in contribution rates or future experience refunds.

If these recommendations are adopted there should be no need to increase the rate of contribution in the future.

The financial position of the Plan and the sufficiency of the contribution rates should be determined as at January 1st, 1992.

We will be pleased to provide any additional information that may be required.

DATED at Winnipeg this 31st day of May, 1990.

Respectfully submitted,

John A. Turnbull.

Actuary

Dennis E. Clement

Actuary

A P P E N D I X

Operation of the Plan

(a) Description of Life Insurance Protection

A description of the life insurance protection provided under the Plan follows:

(i) BASIC LIFE

Each employee who is participating in the Plan is insured for 200% of annual earnings. At the employee's option, this basic life insurance protection can be reduced to 100% of the annual earnings. The amount of basic life insurance protection provided to employees who are employed on a part-time basis is based on the annual earnings in the previous calendar year.

Each employee insured under the Plan who becomes totally disabled continues to be insured for the amount of life insurance protection which was in effect on the date the employee became totally disabled. This life insurance protection continues to be in effect while the employee continues to be totally disabled provided the disabled employee has not yet passed his normal retirement date. On that date, his life insurance protection will decrease. After age 65, the disabled employee will be insured for the proportions of the pre-retirement insurance protection indicated below for retired employees:

Attained Age	Retired Employee* % of Pre-Retirement Insurance Protection	Disabled Employee % of Pre-Disability Insurance Protection
<65	50.00%	100.00%
65 - 69	25.00	25.00
70 - 74	12.50	12.50
75 - 79	6.25	6.25
80 - 84	3.12	3.12
≥85*	$2,000	$2,000

*The minimum amount of basic life insurance protection provided to a retired employee is $2,000.

A retired employee may elect not to make contributions upon retirement or at a subsequent date. If this option is chosen, the amount of life insurance protection is reduced to $2,000.

Effective January 1st, 1990 contributions for employees are paid at a rate equal to 40¢ per month per $1,000 of coverage. This rate of contribution provides for the cost of basic life protection (35¢) and accidental death and dismemberment protection (5¢). No contributions are made for disabled employees who are under age 65. Disabled employees over age 65 are considered to be retired employees and contribute accordingly.

Prior to January 1st, 1990 contributions had been paid at the rate of 44¢ per month per $1,000 of coverage.

Retired and disabled employees contribute at rates which vary by age, as follows:

Attained Age	Monthly Contribution per $1,000 of Life Insurance Protection: Retired Employees	Disabled Employees
<65	$0.40	$0.00*
65 - 69	0.80	0.80
70 - 74	1.60	1.60
75 - 79	3.20	3.20
80 - 84	6.40	6.40
≥85	0.00	0.00

*No contributions are made by or for a disabled employee who has not yet attained age 65.

No contributions are required from retired employees who elect the option of $2,000 life insurance protection after retirement. Retired employees over age 85 make no contribution for the $2,000 of life insurance protection.

The contributions for employees' basic life insurance protection are shared between the employees and their employers or are totally paid for by their employers. Up to two-thirds of the contributions are paid by employees. At least one-third of the contributions is paid by participating municipalities.

Participating municipalities do not make any contributions for protection provided to retired employees.

All contributions are remitted to the Fund.

(ii) VOLUNTARY LIFE

Voluntary life insurance is a benefit which is paid entirely by employees.

An employee may apply for this benefit if the employee has the maximum amount of basic life insurance under the Plan. This maximum amount is equal to 2 times annual earnings.

The amount of voluntary life insurance can be equal to one or 2 times annual earnings.

Voluntary life insurance protection continues to be in effect if the employee is receiving a disability pension from the Pension Plan or disability income from a plan sponsored by a participating municipality. No contributions are required to be paid during such a period.

An eligible employee would be able to apply for an additional amount of voluntary life insurance at any time. An employee would also be able to reduce the amount of voluntary life insurance.

Evidence of insurability is required when an application is made for voluntary life insurance protection or for an increase in this protection.

This evidence would be provided by completing a questionnaire. In special circumstances, a medical examination will also be required.

The rates of contribution per month are as follows:

Attained Age of Employee	Contribution per $1,000	
	Smokers	Non-Smokers
<35	$ .12	$ .07
35 - 39	.15	.09
40 - 44	.24	.12
45 - 49	.42	.18
50 - 54	.77	.35
55 - 59	1.14	.54
60 - 64	1.58	.82
65 - 69	2.22	1.28

An employee is able to choose any beneficiary he/she desires. This beneficiary may be different than the beneficiary for the basic life insurance provided under the Plan.

Voluntary life insurance protection continues to be in effect until the earliest of the following dates.

(A) the date on which the employee's employment terminates as a result of retirement, resignation or dismissal,

(B) the date on which the employee is laid off or commences a leave of absence unless the required contributions are deducted in advance or another acceptable procedure is adopted,

(C) the date on which the employee attains age 70 if the employee is in service on that date, and

(D) the date on which the employee ceases to make contributions to this part of the Plan.

(iii) DEPENDENTS' LIFE

Each employees who is a member of the Plan may apply to insure his/her spouse and dependent children. A waiver form must be completed by each member who does not wish to participate.

This protection can be obtained without evidence of insurability if application is made within 31 days after the date a dependent is acquired.

The amount of life insurance protection provided on a spouse and each dependent child is determined as follows:

Spouse	$10,000
Dependent child	5,000

Dependents' life insurance protection continues to be in effect until the earliest of the following dates:

(A) the date on which the employee's employment terminates as a result of retirement, resignation or dismissal,

(B) the date on which the employee is laid-off or commences a leave of absence unless the required contributions are deducted in advance or another acceptable procedure is adopted, and

(C) the date on which the employee ceases to make contributions to this part of the Plan.

Each member who has insured his/her dependents contributes $2.20 per month beginning December, 1989.

(iv) ACCIDENTAL DEATH AND DISMEMBERMENT

Accidental death and dismemberment (A.D.& D.) insurance protection is provided to those employees who are employees participating in the basic life insurance provided under the Plan.

The amount of A.D.& D. insurance protection provided to each employee is equal to the amount of basic life insurance protection which is provided. A.D.& D. insurance protection is not provided to retired employees.

At present, 5¢ of the 40¢ contributed by employees and/or participating municipalities is paid into the Fund to provide this A.D.& D. insurance protection.

(b) Operation of the Fund

The Fund is the mechanism by which credits and charges in the operation of the Plan are accounted for.

Contributions under the Plan are paid into the Fund and premiums charged by Prudential are paid out of the Fund.

Rebates of premiums (experience refunds) received from Prudential relating to the period ended December 31st are received and recognized in the following fiscal year of the Fund.

Investments are recorded at cost or amortized cost, where applicable. Amortization of premium or discount is calculated using a straight-line method.

The Board is responsible for the administration of the Plan.

The Board entered into an agreement with the Civil Service Superannuation Board to provide administrative services to the Board with regard to its Pension Plan and Group Insurance Plan operations. In accordance with the terms of the agreement, the Board reimburses the Civil Service Superannuation Board for the cost of these services.

The operation of the Fund for the last 3 years is summarized in the following table:

	1988	1987	1986
Contributions:			
Employees	$215,831	$203,804	$187,603
Employers	193,497	180,782	162,947
Premiums to Prudential	(328,088)	(301,645)	(284,704)
Excess of contributions over premiums	$ 81,240	$ 82,941	$ 65,846
Experience refund (includes adjustment)	1,941	43,534	160,837
Interest income	54,297	36,345	15,743
Actuarial fees	(17,952)	(13,698)	(14,442)
Net increase for the year	$119,526	$149,122	$227,984
Retained earnings at beginning of year	660,095	510,973	282,989
Retained earnings at end of year	$779,621	$660,095	$510,973

The amounts shown as experience refunds are in respect of the prior year. Any accrued interest on such refunds has been included in the amount shown.

(c) Financial Arrangements with Prudential

The Plan is underwritten by Prudential under Policy No. ST 59001. Administration of the Policy is handled by Constellation Assurance Company, a subsidiary of Prudential.

The financial arrangements between Prudential and the Board are described in this subsection of the Report.

For each policy year, a refund or deficit is determined by Prudential in respect of the experience of the Plan for the year. The method used to determine the experience refund or deficit for a policy year consists of credits and charges to an experience account. These credits and charges are:

(i) the premiums credited and paid to Prudential for the basic life insurance protection, less

(ii) the claims charged, less

(iii) the retention charges, plus

(iv) the interest credited on net cash flow.

The net credits and charges to the experience account determine the surplus or deficit for the policy year.

(i) PREMIUMS

The premiums for life insurance protection paid to Prudential are based on premium rates which are reviewed each year. These premium rates remain in effect for the period from April 1st to March 31st of the following year.

The contribution rates to the Fund as at January 1st, 1989 are as follows:

		Basis for Contribution	Attained Age	Monthly Contribution Rate to Fund (Smoker/Non-Smoker)
(A)	Basic Life	per $1,000 of insurance		
	- Employees		n/a	$ .35
	- Retired Employees		<65	.40
			65 - 69	.80
			70 - 74	1.60
			75 - 79	3.20
			80 - 84	6.40
(B)	Voluntary Life	per $1,000 of insurance	<35	.12/ .07
			35 - 39	.15/ .09
			40 - 44	.24/ .12
			45 - 49	.42/ .18
			50 - 54	.77/ .35
			55 - 59	1.14/ .54
			60 - 64	1.58/ .82
			65 - 69	2.22/1.28
(C)	Dependents' Life	per insured employee	n/a	2.20
(D)	A.D.& D.	per $1,000 of insurance	n/a	.05

A disabled employee does not make contributions to the Fund until he/she attains age 65.

Retired employees are not able to retain voluntary, dependents', or accidental death and dismemberment insurance protection under the Plan.

(ii) CLAIMS CHARGES

The claims charges are deducted from the premiums and consist of the death claims incurred during the policy year.

Conversion charges determined at the rate of $205 per $1,000 (at age 65) of life insurance protection converted were made. This charge compensates Prudential for the higher than average mortality rates experienced amongst members who convert their life insurance protection when membership in the Plan terminates.

(iii) RETENTION CHARGES

The retention charges or amounts retained by Prudential for premium taxes and for services provided during the policy year consist of the following for the 1989 policy year:

(A) provincial premium taxes equal to 2% of premiums less surplus,

(B) a $1,456 policy fee is charged against the portion of the Policy which provides basic life insurance protection to employees and retired employees,

(C) a charge of $130 per death claim,

(D) a charge of $140 for each medical application and $18 for each non-medical application for underwriting charges.

(E) a charge for contingencies, profit and all general administrative services other than claims payments. This charge consists of a charge for contingencies, profit, and general administrative services based on the following scale:

Premium Less Margin	% Charge
First $250,000	3.25%
Next 250,000	1.50
Next 250,000	1.25
Next 250,000	1.00

(F) charges for risk and stop-loss are made in accordance with the following scale:

Annual Premium	Percentage
First $250,000	.75%
Next 250,000	.50
Next 250,000	.25

This amount is paid so that the claims charged to the Policy in any one policy year will not exceed 2 times the premiums paid in that year. This is most likely to occur when there is an abnormally large number of claims. An abnormally large number of claims would arise if a considerable number of employees die as a result of an accident, such as a plane crash.

(iv) INTEREST ON NET CASH FLOW

Interest is charged on net cash flow, if the cash flow is negative.

(v) SURPLUS

The surplus (deficit) for the policy year is equal to the difference between the premiums paid and charges incurred for the life insurance protection provided during the year.

Any surplus (deficit) produced during the year is credited (charged) to the Claims Fluctuation Reserve held by Prudential. The Claims Fluctuation Reserve belongs to the Board. The balance of the Claims Fluctuation Reserve is credited (or charged) with interest. The rate of interest credited to this Reserve is the rate "applicable to short-term commercial paper". An experience refund is paid, if surplus plus the Claims Fluctuation Reserve exceeds 50% of the premiums paid (excluding A.D.& D.) during the policy year just completed. The amount of the experience refund is equal to the excess.

The portion of any deficit, which will cause the Claims Fluctuation Reserve to exceed 100% of premiums paid during the policy year just completed, is written off by Prudential.

The premiums for insurance protection are paid out of the Fund.

The amounts remitted to Prudential are based, in part, on the claims experience. These amounts may also change when there is a significant change in the distribution of insurance by

age and sex. For example, the amount remitted in respect to retired employees increases as the average age of retired employees increases.

If this Policy is terminated, the surplus or deficit is calculated as if the Policy was still in effect. If, on the final settlement date, there is a surplus after taking into account any surplus or deficits carried forward from prior years, Prudential will pay the amount of the surplus as a final settlement. If there is a deficit, Prudential is responsible for that deficit.

No experience rating type of tabulation is made for the accidental death and dismemberment part of the protection.

The experience under the accidental death and dismemberment part of the Policy is fully pooled. There is no experience rating for this benefit. This is done because actual experience is not reliable where only a few claims are expected each year. The surplus or deficit under the Policy is determined after first excluding the amounts credited to or charged against the Policy in respect of the accidental death and dismemberment insurance protection.

In summary, the financial arrangement with Prudential for the basic life insurance part of the Policy has the following features:

(A) A surplus (deficit) each year is determined by deducting the amounts charged against the Policy from the premiums paid during the year.

(B) A surplus is credited to the Claims Fluctuation Reserve. A deficit is charged to the Claims Fluctuation Reserve.

(C) Interest is credited (charged) on the balance held in the Claims Fluctuation Reserve from the end of the policy year to the end of the following policy year.

(D) Amounts are paid to the policyholder when the Claims Fluctuation Reserve exceeds 50% of the premiums. Interest is added to any amounts paid to the policyholder from the end of the policy year to the date the surplus is paid by Prudential.

(E) Amounts are written off by Prudential when the deficit held in the Claims Fluctuation Reserve exceeds 100% of premiums.

(F) Any surplus which emerges after the Policy terminates is refunded to the policyholder; any deficit is the reponsibility of Prudential.

Summary of Financial Results

	1988	1987	1986
1. Premiums			
Employees	$262,682	$243,971	$231,106
Retired Employees	43,296	35,774	31,159
A.D.& D.	35,328	33,522	31,665
	$341,306	$313,267	$293,930
Less: A.D.& D.*	35,328	33,522	31,665
	$305,978	$279,745	$262,265
2. Claims charges			
Employees	$204,000	$260,000	$203,500
Retired Employees	38,000	8,341	10,000
	$242,000	$268,341	$213,500
3. Retention charges			
Premium Taxes	$ 6,120	$ 5,595	$ 5,245
Policy Fee	1,456	1,400	1,000
Claims Administration	1,430	1,375	2,519
Underwriting Charges	298	186	30
General Administration & Profit	8,965	8,571	8,309
Risk & Stop-Loss Charges	2,155	2,024	1,936
Conversion Charges	0	0	0
	$ 20,424	$ 19,151	$ 19,039
4. Interest			
Paid to Beneficiaries	$ (2,566)	$ (4,529)	$ (3,264)
Accrued on Premiums Due & Paid	12,569	10,080	11,238
Accrued on Death Claim Cheques Paid	(3,060)	(6,081)	(8,243)
Accrued on Premium Taxes Paid	(240)	(191)	(213)
Accrued on Other Expenses Incurred	(667)	(554)	(631)
	$ 6,036	$ (1,275)	$ (1,113)
5. Surplus for policy year (1 - 2 - 3 + 4)	$ 49,590	$ (9,022)	$ 28,613
6. Transfer from claims fluctuation reserve to surplus	$ (7,486)	$ 9,022	$ 12,771
7. Refundable surplus on December 31st (5 + 6)	$ 42,104	$ 0	$ 41,384
8. Premium tax credit on refundable surplus	$ 859	$ 0	$ 845
9. Experience refund due on December 31st (7 + 8)	$ 42,963	$ 0	$ 42,229

*A.D.& D. premiums are fully pooled and therefore have been deducted in determining the surplus (deficit).

Summary of Claims Fluctuation Reserve Results

		1988	1987	1986
1.	Opening balance	$133,074	$131,133	$131,479
2.	Interest earned (charged)	12,429	10,963	12,425
3.	Transfer from Surplus	7,486	(9,022)	(12,771)
4.	Closing balance	$152,989	$133,074	$131,133